Statement under PCT Rule 66.2(a)(ii) With Regard to Novelty, Inventive Step or Industrial Applicability

Inventive Step

The Written Opinion notes that claims 1-22 do not meet the criteria of Article 33(3) PCT because the subject matter of the claims do not involve an inventive step in light of the teachings of references D1 and D2. An inventive step is present, however, in amended independent claims 1, 8, 21, and 22 because each claim teaches a method of making ammonia or hydrogen that is produced *at a point of use*, unlike anything taught or suggested by D1 and D2. Thus, all pending claims involve an inventive step.

The application sets forth several advantages of point of use production. In particular, "[p]oint of use production eliminates the contamination associated with delivery from bulk storage and cylinders, and the need for layers of distributed purification" (see page 5, lines 26-27). The application notes that "it has become the common practice of ammonia users to change cylinders with 20% or more of the total volume of the cylinder remaining due to this concentration of impurities 'at the bottom of the barrel'" (see page 3, lines 15-18). As well, given that the taught methods use common reagents, such as deionized water and standard purity nitrogen, they allow point of use production of high purity ammonia, hydrogen, and nitrogen in areas with limited chemical infrastructure, or limited production and distribution of ultra high purity gases (see page 5, line 27 - page 6, line 3).

References D1 and D2 fail to teach the production of ammonia or hydrogen at a point of use, in accord with the pending claims. D1, directed to a process for making nitric oxide, notes that hydrogen and nitrogen can be reacted to produce ammonia. D1 provides no suggestion that ammonia be produced at a point of use.

D2 teaches the use of regenerable gas purifier materials to *purify an existing gas* by removing contaminants therefrom. D2 does not teach *producing* ammonia or hydrogen by using a purifier to purify the reactants that form the product gas and subsequently producing the product gas at the point of use. Indeed, Examples 2 and 3 in

D2 show how a purifier may be used to remove oxygen and water from an *existing* ammonia source (see paragraphs **[0053]** - **[0057]**) . Though, D2 may teach eliminating some contaminants from an existing ammonia source, D2 would still be subject to the problem of wasted ammonia or hydrogen (or excessive contaminant loading of a purifier) due to heavy contamination of the bottom fraction of the cylinder-delivered fluid. As well, the problem of distribution of purified ammonia or hydrogen would still be present. The claimed methods, however, provide ammonia or hydrogen at the point of use, thus avoiding the problems of heavily contaminated fluids at the bottom of a delivery container, or the need for a distribution system for purified gases. D2 does not suggest producing a product gas at the point of use.

Since D1 and D2 lack an element in claims 1, 8, 21, and 22, the independent claims have an inventive step. All other claims being dependent therefrom also have an inventive step.

In view of the above amendments and remarks, favorable consideration of the application is respectfully requested.

Respectfully submitted,

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